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Ido Milstein

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07/12/2010

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EXAMINER

AMIN, BHAVESH V

ART UNIT

PAPER NUMBER

3664

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/597,221	<b>Applicant(s)</b> MILSTEIN ET AL.	
	<b>Examiner</b> BHAVESH V. AMIN	<b>Art Unit</b> 3664	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 5/4/2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 - 18 & 20 - 33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 12, 14 - 18, 20 - 25 & 28 - 33 is/are rejected.
- 7) ☐ Claim(s) 13, 26 & 27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 July 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

***Response to Amendment***

***Drawings***

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the computer must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. Claim 1 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Where applicant has now amended to include “predefined path segments,” it is not specified in the specification as to what this is and how to determine the “predetermined segments.” Applicant is required to show support for this change in the specification to allow one of ordinary skill in the art to make or use this invention. Further more claim 22 is rejected under this as applicant fails to show how “gradient method” is support by their current specification and instead directs the office to Wikipedia which is not relied upon to be a source which can be cited. Claim 27 is also rejected under here as it is not clear or supported by applicant’s specification as to what “heap type data structure” is, and thus does not allow one of ordinary skill in the art to carry out the claimed invention as currently presented.

3. Claim 22 is rejected under 35 U.S.C. 112, second paragraph, as failing to set forth the subject matter which applicant(s) regard as their invention. Evidence that claim 22 fail(s) to correspond in scope with that which applicant(s) regard as the invention can be found in the reply filed 05/04/2010. In that paper, applicant has stated “In particular connection with claim 21 [sic], it is respectfully noted that a gradient method is a standard and well- known computer algorithm. If the Examiner is unfamiliar with this, he is respectfully referred to the Wikipedia discussion on this subject.”, and

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this statement indicates that the invention is different from what is defined in the claim(s) because applicant has failed to describe what the invention is as it pertains to their invention.

4.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over DeGraaf US Patent 5,878,368.

Regarding claim 1 where it is disclosed by DeGraaf to have a method for finding a route based on cost as shown in Figure 4. This is read upon by applicant's claim to as indicated below:

“A method of finding a path from a start point to a target point, in multi-dimensional space, comprising:(a) determining a plurality of points in a physical space, including a start point and an target point [Fig 2 (boxes 157 & 158) & Fig 4];(b) computing, using a programmed general purpose computer [CPU 22] and a cost function, for said points an accumulated path cost from the start point to a point; representing a minimal cost path from the start point to the point with respect to an optimization criteria [Fig 4 and column 3 lines 1 – 13];(c) computing, using said computer, for at least some of said points an estimated-cost-to-target from a point to the

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target point [column 6 lines 20 – 45] wherein selection of the points for said estimated-cost-to-target computation is accord to a pre-established criterion [Fig 2 & 4, where predetermined is the user preferences described in column 4 lines 15 – 30] ; and(d) after computing said costs, determining, using said computer, at least one of a minimal path or a minimal path cost of a path from the start point to the target point in the physical space, wherein the determination is based on said accumulated path costs [Fig 4], and is substantially minimal with respect to the optimization criteria [fig 4 and column 6 lines 45 – 67 & column 7 lines 1 – 10], and wherein said path is not constrained by predefined path segments [summary of the invention].”

However if applicant finds that it is not inherent that the DeGraaf references does disclose the route and this is not constraint by the route segments it would have been obvious to one of ordinary skill in the art at the time of invent to modify DeGraaf to have a system that can use different routes to obtain a route based on users preferences to certain routes or types of roads etc.

Regarding claim 3 where it is disclosed by DeGraaf to determine and present the user with the lowest cost path as described in column 6 lines 45 - 64. This is read upon by applicant's claim to, “wherein the accumulated path cost at the target point approximates a minimal accumulated path cost of a path from the start point to the target point in the physical space.”

Regarding claim 4 where it is disclosed by DeGraaf in column 6 lines 22 – 45 to have their system determine the path by using segment/nodes to determine the most cost effective path. This is read upon by applicant's claim to, “wherein the minimal path

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determined is made of line segments and each line segment connects two of said points.”

Regarding claim 5 where it is disclosed by DeGraaf to have their system determine the most cost effective path and also considers other paths to determine the most efficient path as described in column 6 lines 20 - 67. It is furthermore shown by DeGraaf to have the system determine many routes and hence also compares all of the routes from one another and hence finds the one with the lowest cost. This is read upon by applicant's claim to, “wherein the minimal path cost has a lower or equal cost than any zigzag path from the start point to the target point, wherein the zigzag path connects a plurality of said points, only by straight line segments.”

Regarding claim 6 where it is disclosed by DeGraaf in Figure 4 boxes 202 & 204 where it describes the distance or time of the route, hence the route would have to be pretty short and smooth to meet one of the above criterion. This is read upon by applicant's claim to, “wherein the minimal path determined is a continuous smooth line.”

Regarding claim 7, where it is disclosed by DeGraaf to have a system that can update congestion along the route and hence reroute the vehicle to minimize the cost function, as is described in column 2 lines 25 - 35. This is read upon by applicant's claim to, “comprising repeatedly updating the accumulated path costs until a stopping criteria is satisfied.”

Regarding claim 8 where it is disclosed by DeGraaf to have a system that can determine different routes based on the users preferences and cost of the route and

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change them as described in column 2 line s1 – 15. This is read upon by applicant's claim to, "comprising selecting additional points based on said computed costs."

Regarding claim 9 where it is disclosed by DeGraaf to have their system determine the cost of the segments which intern means two points of each segment and hence reads upon applicant's claim to, "the accumulated path cost of a point is a function of a local cost of the point and an accumulated path cost of at least one neighbor point of the point." This is described in DeGraaf in column 6 lines 22 – 64.

Regarding claim 14 where DeGraaf shows in figure 4 box 202 how their system can determine the travel path with the shortest time hence is read upon by applicant's claim to, "wherein computing said accumulated path cost is carried out using cost calculations suitable for a fast marching method."

Regarding claims 15 & 16 where it is disclosed by DeGraaf in column 5 lines 60 – 65 describes how the navigation device displays the directions turn by turn hence show a grid map. Hence it would have been obvious to have the device if not inherent to be able to show an "irregular" grid as well if it can show a regular grid. It is believed that it would have been capable by one of ordinary skill in the art at the time of invention to use substitution resulting in predictable results of the exchange of grids for displaying information.

Regarding claim 17 & 18 where it is disclosed by DeGraaf to have their system determine the cost of the route step by step from start point to destination point using segments which consist of two points. This is disclosed in Fig 2, furthermore it is disclosed by DeGraaf in figure 4 to have the system determine the cost between two



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points e.g., the start point and destination point and find the most cost effective route.

This is read upon by applicant's claims to, "wherein said computing using a cost function comprises computing the cost function for grid points in a particular order," and "wherein neighbors of a point are one or more adjacent grid points to the point."

Regarding claim 29 where this has similar limitations as claim 7 and thus is rejected for the same reasons as stated for claim 7 above.

Regarding claim 30 where this has similar limitations as claim 7 above and thus is rejected for the same reasons as stated for claim 7 above.

Regarding claim 28 where it is disclosed by DeGraaf to have the points be subjected to both the shortest distance and quickest time criterion. Thus it would have been able to use different points based on their relationship to distance and time. Hence if it is not found obvious that DeGraaf discloses this then it would have been obvious to one of ordinary skill in the art at the time of invention to have efficient determination of the shortest/quickest route and compare the two as these points may not be the same.

Regarding claim 6 where it is disclosed by DeGraaf to have their system present the short route to the user and hence the shortest route between one point to another on a map is a straight smooth line and hence would inherently carry out this function. This is described in DeGraaf in background of the invention.

Regarding claim 22 where it is disclosed by DeGraaf to have their system determine the shortest route and hence would find/calculate the shortest path using equation, from point a to point b. This is read upon by applicant's claim to, "path is

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carried out by a gradient descent method applied on said points for which an estimated-cost-to-target from point to the target point is calculated.” If it is not found by applicant to be inherent that the equation is taught by DeGraaf then it would have been obvious to use a well know equation for the purpose of determine shortest route as was pointed out by applicant in their reply to the non final office action that the equation is well known.

Regarding claims 23 & 24 where it is disclosed by DeGraaf to in their disclosure to have their system determine the shortest route or the route with the shortest travel time as described in column 4 lines 5 – 55, the user can either increase or decrease their preference for criterion and thus this allows the device to determine the shortest route based on that information. This is read upon by applicant's claim to, "said estimated-cost-to-target computation is adjusted by decreasing the computer value for use in determination of the minimal path or minimal path cost."

Regarding claim 27 where it is disclosed by DeGraaf to have their system determine the best route based on cost and thus they have to find an optimal value based on the information stored on their database. Thus even though DeGraaf does not specifically disclose the use of "heap type data structure" it would have been obvious to one of ordinary skill in the art at the time of invention to determine the point with the smallest cost, since it has been held that discovering an optimum value of result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Regarding claims 31 – 33 where it is disclosed by DeGraaf to have their system use the user preferences to determine a route and hence based on that information pick segment or remove segments based on these prerequisites and thus calculate a route based on this information and evaluate the final route to make sure that it meets all the requirements as previously explained in column 4.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2, 10, 12, 20 & 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over DeGraaf in further view of Schneider, Jr. US Patent 5,394,325 (hereafter referenced as Schneider).

Regarding claim 2 where all the limitations of claim 1 are disclosed by DeGraaf, whom does not specifically disclose the further limitation of, “determining a plurality of points comprises generating a discrete model of said physical space.” This is disclosed by Schneider in column 6 lines 23 – 43, where they disclose using a modeling for showing the traveling through time, hence discrete space. Thus it would have been obvious to one of ordinary skill at the time of invention to modify DeGraaf by Schneider to efficiently and accurately determine the travel time between points.

Regarding claim 10 where all the limitations of claim 1 are disclosed by DeGraaf, whom does not specifically disclose the further limitation of, “wherein computing said

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accumulated path cost comprises solving an Eikonal equation.” This is disclosed by Schneider in column 1 lines 59 – 68, where they describe the use of Eikonal equation. Thus it would have been obvious to one of ordinary skill in the art at the time of invention to modify DeGraaf by Schneider to allow for an efficient and accurate process.

Regarding claim 11 where all the limitations of claim 10 are disclosed by DeGraaf and Schneider, where Schneider further discloses the limitation of, “solving comprises employing a finite-difference approximation to an Eikonal equation.” This is disclosed by Schneider in summary of the invention where they describe using finite difference equations column 4 lines 20 – 25. Hence it would have been obvious to one of ordinary skill in the art at the time of invention to modify DeGraaf by Schneider to enable fast and accurate solutions to problems.

Regarding claim 12 where all the limitations of claim 10 are disclosed by DeGraaf and Schneider, where it is further disclosed by Schneider to have the use of Eikonal equations. Thus it would have been obvious to one of ordinary skill in the art at the time of invention to modify DeGraaf by Schneider to use limits in equations to reduce the time for computation and reduce the error rate and increase efficiency.

Regarding claim 20 where all the limitations of claim 1 are disclosed by DeGraaf, who does not specifically disclose the further limitation of, “the points are arranged as a graph.” This is disclosed by Schneider in Figs 5A-B and thus it would have been obvious to one of ordinary skill in the art at the time of invention to modify DeGraaf by Schneider show the most cost efficient path between points.

Regarding claim 25 where all the limitations of claim 1 are disclosed by DeGraaf who does not specifically disclose the limitation of, “estimated cost to target is based on a Euclidian distance to said target.” This is disclosed by Schneider where it is disclosed by them to have a estimation equation “Runge kutta” method as described in column 17 lines 16 – 31, to produce smooth lines and thus it would have been obvious to one of ordinary skill in the art at the time of invention to modify DeGraaf by Schneider using simple substitution of well known equation to produce a predictable result. (MPEP 2143).

***Allowable Subject Matter***

9. Claims 13 & 26 - 27 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Response to Arguments***

10. Applicant's arguments filed 05/04/2010 have been fully considered but they are not persuasive. Where applicant argues, “The invention as described in claim 1 differs from DeGraaf in another important respect as well. DeGraaf begins with a pre-established database including path lengths and costs as defined by the constraining map, and describes a mechanism for altering the lengths/costs of segments using weights so that the original database of lengths/costs is adjusted. The search method for selecting the multiple relevant routes (176) before applying the weight adjustments is not described.” This is not currently supported by applicant current presented claims and hence is not persuasive.

***Conclusion***

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BHAVESH V. AMIN whose telephone number is (571)270-3255. The examiner can normally be reached on M - T, Friday off, 7:30am to 6:00pm, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Khoi Tran can be reached on 571-272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For

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more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/B. V. A./

Examiner, Art Unit 3664

/KHOI TRAN/

Supervisory Patent Examiner, Art Unit 3664